

[Back](#)

## Agricultural and Food Science - abstract



Vol. 16 (2007), No. 3, p. 267-277

RASA, KIMMO, HORN, RAINER, RÄTY, MARI, YLI-HALLA, MARKKU,  
PIETOLA, LIISA,  
Water repellency of clay, sand and organic soils in Finland

Keywords Water repellency, hydrophobicity, infiltrometer, ethanol, clay soil, sand soil, organic soil, boreal climate zone,

### Abstract

Water repellency (WR) delays soil wetting process, increases preferential flow and may give rise to surface runoff and consequent erosion. WR is commonly recognized in the soils of warm and temperate climates. To explore the occurrence of WR in soils in Finland, soil R index was studied on 12 sites of different soil types. The effects of soil management practice, vegetation age, soil moisture and drying temperature on WR were studied by a mini-infiltrometer with samples from depths of 0-5 and 5-10 cm. All studied sites exhibited WR (R index >1.95) at the time of sampling. WR increased as follows: sand (R = 1.8-5.0) < clay (R = 2.4-10.3) < organic (R = 7.9-undefined). At clay and sand, WR was generally higher at the soil surface and at the older sites (14 yr.), where organic matter is accumulated. Below 41 vol. % water content these mineral soils were water repellent whereas organic soil exhibited WR even at saturation. These results show that soil WR also reduces water infiltration at the prevalent field moisture regime in the soils of boreal climate. The ageing of vegetation increases WR and on the other hand, cultivation reduces or hinders the development of WR.

Contact [kimmo.rasa@helsinki.fi](mailto:kimmo.rasa@helsinki.fi)

[\[Full text\]](#) (PDF 496 kt)

Update 21.12.2007.

Source: MTT's Publications database [Afsf](#)